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INT.CL. : A61K 35/74 A61K 33/06

TITLE : PROMOTER OF MINERAL ABSORPTION, AND MINERAL NUTRIENT

ABSTRACT : PROBLEM TO BE SOLVED: To obtain a promoter of mineral absorption having activities promoting the absorption of calcium and magnesium supplied from exterior to the interior of the body, and useful for treating and preventing osteoporosis by including a fermented material by using lactic acid bacteria.

SOLUTION: This promoter of mineral absorption includes a fermented material by using lactic acid bacteria belonging to genus lactobacillus, preferably Lactobacillus casei, and/or the one belonging to genus streptococcus, preferably Streptococcus thermophilus. The promoter can include a dried powder, etc., obtained by using the fermented material as a raw material, as an active ingredient. Further the promoter can have a form of a fermented milk such as yogurt, or can be prepared as a composition containing $\geq 10\%$ of the fermented material expressed in terms of solid.

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Title

Mineral absorption stimulators, used to prevent and treat e.g. osteoporosis - comprise fermented product of lactic acid bacteria of *Lactobacillus* sp. and/or *Streptococcus* sp..

Patent Assignee

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Patent Information

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Abstract

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Mineral absorption stimulators (especially Ca or Mg) (I) comprise fermented product of lactic acid bacteria of *Lactobacillus* sp. (especially *Lactobacillus casei*) and/or *Streptococcus* sp. (especially *Streptococcus thermophilus*). Also claimed are mineral supplying agents comprising (I) and Ca and/or Mg salts.

USE - (I) are used to prevent and treat osteoporosis, diabetes and hypertension and improve health.

ADVANTAGE - (I) are safe.

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Buy Now: [More choices...](#)Tools: Add to Work File: [Create new Work File](#)View: [INPADOC](#) | Jump to: [Top](#) ☐ Go to: [Derwent...](#) ☒Title: **JP10158178A2: PROMOTER OF MINERAL ABSORPTION, AND MINERAL NUTRIENT**Country: **JP Japan**Kind: **A**Inventor: **NAGANAMI OSAMU;
TAKAHASHI RIE;**Assignee: **YAKULT HONSHA CO LTD**
[News, Profiles, Stocks and More about this company](#)Published / Filed: **June 16, 1998 / Nov. 29, 1996**Application Number: **JP1996000333117**IPC Code: **A61K 35/74; A61K 33/06;**Priority Number: **Nov. 29, 1996 JP1996000333117**

Abstract:

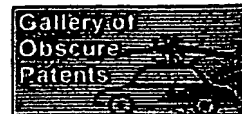
PROBLEM TO BE SOLVED: To obtain a promoter of mineral absorption having activities promoting the absorption of calcium and magnesium supplied from exterior to the interior of the body, and useful for treating and preventing osteoporosis by including a fermented material by using lactic acid bacteria.

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Family: **None**Other Abstract Info: **CHEMABS 129(03)027506P CAN129(03)027506P DERABS C98-393397 DERC98-393397**

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(54) [Title of the Invention] MINERAL ABSORBEFACIENT AND MINERAL FORTIFIER

(57) [Summary of the Invention]

[Problem] To provide the body with mineral absorbefacient which promotes the absorption of calcium and magnesium and makes calcium absorption by the body more effective

[Solution] The mineral absorbefacient contains material fermented from lactic acid bacteria belonging to the genus of Lactobacillus and/or the genus of Streptococcus, and the mineral fortifier wherein the calcium salt and/or the magnesium salt were

mixed in this mineral absorbefacient

[Claims]

[Claimed Item 1]

The mineral absorbefacient characterized by containing the material fermented by using the lactic acid bacteria belonging to the genus of Lactobacillus and/or the genus of Streptococcus

[Claimed Item 2]

The mineral absorbefacient listed in Claimed Item 1, wherein the lactic acid bacteria belonging to the genus of Lactobacillus are Lactobacillus casei and the lactic acid bacteria belonging to the genus of Streptococcus are Streptococcus thermophilus

[Claimed Item 3]

The mineral absorbefacient listed in Claimed Item 1 and Claimed Item 2, wherein said minerals are calcium and magnesium

[Claimed Item 4]

The mineral fortifier characterized by mixing the calcium salt and/or the magnesium salt in the mineral absorbefacient listed in either Claimed Item 1 or Claimed Item 3

[Detailed Description of the Invention]

[0001]

[Technological Field of the Invention] This invention relates to the mineral absorbefacient and the mineral fortifier. In detail it relates to the mineral absorbefacient promoting the absorption of the minerals such as calcium and magnesium from the enteric canal of human beings or animals and to the mineral fortifier wherein the calcium salt and the magnesium salt were added to this mineral absorbefacient

[0002]

[Conventional Technology] According to the nutritional allowance index of the Japanese people announced by the Ministry of Health and Welfare; (supervised by the Health Service Bureau of the Health Promotion and Nutrition Division of the Ministry of Health and Welfare, "The fifth year of Heisei Edition, The present nutritional condition of the people, A national nutrition survey record in the third year of Heisei", Daiichi Shuppan, October in the fifth year of Heisei), the daily calcium intake of Japanese is 541 mg per person which is lower than the recommended daily intake for Japanese in all age groups. And, with the expected growing aging society, the increase in the number of patients with osteoporosis due to calcium intake shortage is looked at with apprehension.

[0003] The necessity of increasing average calcium intake has been requested by such

bacteria belonging to the genus of *Lactobacillus* and/or the genus of *Streptococcus*. This fermented material can be used if it is prepared using the publicly known method of using lactic acid bacteria belonging to the genus of *Lactobacillus* and/or the genus of *Streptococcus* as the starter.

[0010] The lactic acid bacteria separated from the commercially available fermented material, the bacterial strain subdivided from ATCC or IFO, or commercially available starters can be used sufficiently as the lactic acid bacteria belonging to the genus of *Lactobacillus* and/or the genus of *Streptococcus* (hereinafter referred as to "the lactic acid bacteria"). The microorganisms belonging to the genus of *Lactobacillus* such as *Lactobacillus casei*, *Lactobacillus plantarum*, *Lactobacillus johnsonii* and *Lactobacillus acidophilus*, and the microorganisms belonging to the genus of *Streptococcus* such as *Streptococcus thermophilus*, *Streptococcus Lactis* (*Lactococcus lactis*), *Streptococcus cremoris* (*Lactococcus cremoris*) and *Streptococcus diacetylactis* (*Lactococcus diacetylactis*) are preferable lactic acid bacteria. Among these, especially preferable microorganisms to be used are *Lactobacillus casei* and *Streptococcus thermophilus*.

[0011] The dried powder made from the material fermented by using the above lactic acid bacteria, for example, freeze-dried powder and spray-dried powder can be used as an active constituent of the mineral absorbefacient of this invention.

[0012] The mineral absorbefacient of this invention can be provided in the form of fermented milk such as regular yogurt or the treatment tablet and powder made from the dried powder of the fermented material. The material fermented by using the above lactic acid bacteria can be used as this mineral absorbefacient. This mineral absorbefacient can be prepared as a formed element by mixing more than 10 % (10-30 % preferable) of the material fermented by using the above lactic acid bacteria.

[0013] On the other hand, the mineral fortifier of this invention can be prepared by mixing the calcium salt and the magnesium salt in the above mineral absorbefacient.

[0014] The calcium salt to be mixed in the mineral fortifier is not specially limited, so that the natural materials such as egg-shell and oyster shell, or calcium carbonate, calcium chloride, a calcium lactate, a calcium gluconate and calcium citrate containing calcium for food additive can be used.

[0015] The magnesium salt is also not specifically limited, so that seaweeds such as green laver, kelp and brown alga, confectionery such as cacao bean, sesame seed, soybean, almond and peanut, natural materials such as rice bran and bitter, or magnesium carbonate, magnesium chloride or magnesium sulfate containing magnesium for food additive can be used.

[0016] To prepare the mineral fortifier of this invention, it is desirable to mix about 100-3000 mg of magnesium and about 50-1500 mg of calcium (especially, about 500-2500 mg and about 250-1250 mg) in every 100 g of solid content of the material fermented by using the above lactic acid bacteria.

[0017]

The mineral absorbefacient and the mineral fortifier of this invention can be provided in the form of liquid food such as yogurt and drink or the powder type food materials, or can be provided in the form of powder, tablet and capsule made from the fermented material powdered as stated previously. In the latter case, the binding agents such as tragacanth gum, gum arabic, cornstarch and gelatine used for tablets and capsules, the diluting agents such as microcrystalline cellulose and magnesium stearate, and the swelling agents such as cornstarch and arginic acid can be used. And, shellac and sugar can be used as tablet coating.

[0018]

[Embodiments] The following embodiments are shown in order to explain this invention in detail. However, this invention is not limited to these embodiments.

[0019] Embodiment 1

UHT sterilization was carried out after homogenizing the dried skim milk solution of the fat-free milk solid content 10 weight per cent.

The fermented milk was prepared by adding *Lactobacillus casei* and *Streptococcus thermophilus* prepared by the usual manner to pasteurized milk and by pasteurizing for 18 hours at 37° C. The acidity of the lactic acid contained in this fermented milk was about 2 %. This fermented milk can be used as the mineral absorbefacient.

[0020] Embodiment 2

The mineral fortifier was prepared by adding 2 g of calcium gluconate and 0.2 g of magnesium chloride to 100 g of the yogurt prepared in Embodiment 1.

[0021] Embodiment 3

The fermented milk prepared in Embodiment 1 was processed into dried powder using the freeze drying method. The capsule was prepared by filling the evenly mixed 10 g of calcium gluconate, 1 g of magnesium chloride, 24 g of cornstarch, 70 g of microcrystalline cellulose and 100 g of this dried powder into No. 3 gelatine capsule.

[0022] Example

Examination of the absorbefacient of calcium and magnesium: The effect of the mineral absorbefacient prepared in Embodiment 1 was examined as follows:

(Method of Examination) The effect of this invention on the absorbefacient of calcium and magnesium was evaluated by the balance test using rats. In other words, twelve

male rats of five-weeks old were divided into two groups (Each group consisted of 6 rats). Each rat had been bred in a separate cage for seven days by using the feed listed in Table 1 under the environment of $24 \pm 1^\circ$ room temperature, $60 \pm 5\%$ humidity and 12 hours light-dark cycle. The balance test had been carried out for three days from the fifth day of breeding, and the rates of apparent calcium absorption and apparent magnesium absorption were measured.

[0023] (Sample Feed) Sample feed was prepared so that every 100 g of feed contains 20 g of mineral absorbefacient (the freeze-dried powder of the fermented milk prepared in Embodiment 1). On the other hand, the control feed was prepared by adding the dried skim milk that was a main raw material of this invention to the feed.

The sample feed used is shown in Table 1.

[0024]

[Table 1]

Processing Ingredient	Control Feed	Sample Feed
Casein	15.1	15.1
DL-methionine	0.3	0.3
Corn oil	5	5
Mineral mixture	3.5	3.5
Vitamin mixture	1	1
Choline bitartrate	0.2	0.2
Cellulose	5	5
Saccharose	47.561	47.561
Magnesium oxide	0.057	0.057
Calcium carbonate	0.871	0.871
Potassium dihydrogenphosphate	1.105	1.105
Potassium carbonate	0.306	0.306
Dried skim milk	20	0
Mineral absorbefacient	0	20

(The unit of the number in Table is a weight per cent.)

[0025] (Result of Examination)

The result of examination is shown in Table 2 below.

The result of performing T-test on the apparent calcium absorption and apparent magnesium absorption of the control group and sample group are listed in this Table 2 and shows that significant differences exist between the two groups when using a paired T-test at 95% significance level. In other words, the group of rats that was administered Mineral absorbefacient feed showed a significant increase in rates of

apparent calcium absorption and apparent magnesium absorption in comparison with the control group that was given dried skim milk alone.

[0026]

Table 2

	Control Feed Group	Sample Feed Group
Apparent calcium absorption (%)	70.5±3.3	77.3±0.6
Apparent magnesium absorption (%)	72.1±4.3	79.8±2.4

[0027]

[Effect of the Invention] The mineral absorbefacient and the mineral fortifier provided by this invention can promote the absorption of calcium and magnesium, and can prevent or treat many diseases such as osteoporosis, diabetes and hypertension caused by the shortage of calcium and/or the shortage of magnesium. Moreover, the lactic acid bacteria used for preparing the fermented material of the active constituent are nonpathogenic safe microorganisms as seen in the example used for the production of food fermented by the lactic acid bacteria since the old days. In other words, no rat died by the oral administration of the mineral absorbefacient and the mineral fortifier of this invention, and there was no problem in the safety for prolonged administration.

[0028] Therefore, the mineral absorbefacient and the mineral fortifier of this invention can be used as a medical supply administered orally or can be taken as a food every day, so that the mineral absorbefacient and the mineral fortifier are extremely useful for the prevention of many diseases such as osteoporosis, diabetes and hypertension caused by the shortage of calcium and/or the shortage of magnesium and for the improvement of the health.

End